

NATURAL RESOURCES CONSERVATION SERVICE CONSERVATION PRACTICE STANDARD

TILE INTAKE REPLACEMENT, (NUMBER)

Interim Code 980

DEFINITION

Removal of a tile intake from a depressional or pothole area and replacement of the intake with subsurface drains.

PURPOSE

To improve water quality by eliminating surface water intakes which allow water to drain directly into the groundwater through an agricultural drainage well.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all sites in which a surface water intake in a pothole or depressional area removes surface water into a subsurface drain or conveyance pipeline which outlets into an agricultural drainage well. This practice is not intended to change the status of any wetlands or areas, which could be determined to be wetlands. The capacity of outlets will not be increased. Subsurface drainage is utilized to provide comparable drainage at the site as was available with the surface intakes.

The standard also applies to replacing tile intakes which are part of a terrace system if the tile outlets into an agricultural drainage well.

CRITERIA

- Remove the tile intake.
- Place a line or grid of perforated tile in the vicinity of the tile intake location.
- Tile lines in grids should be spaced as follows depending on the soil permeability:

| <u>Permeability</u> | <u>Tile Line Spacing</u> |
|--------------------------|--------------------------|
| • less than 0.6 in/hr | 10 feet |
| • greater than 0.6 in/hr | 15 feet |

- The minimum depth of cover over the tile shall be three feet unless a shallower depth is required to tie into the existing tile line. However, in no case shall the tile have less than two feet of cover. If the main through the depression or pothole has less than two feet of cover, the main shall either be relocated to achieve two feet of cover or be replaced with non-perforated pipe through the shallow reach.
- The total length of tile to be used to replace each intake is based on the size of the pothole or depression. Fifty feet of tile should be used for each 0.1 acre of pothole or depression. The size of the pothole or depression can be estimated based on the area of the least permeable soil type around the intake.
- Backfill of the tile trench shall be of material, which is similar to the surrounding natural ground.
- The density of the backfill in the trenches shall be comparable to the density of the surrounding in situ material.
- French drains or other types of drains utilizing granular material for the drainage medium will not be allowed.

If air vents or relief wells are needed when the surface intake is removed, the following criteria should apply:

- The material shall be non-perforated pipe.
- Generally, pipe with the same diameter as the surface intake should be used.
- The top of the pipe shall extend to the maximum water level that could be expected.
- The top of the air vent or relief well should be covered with expanded metal or similar type of cover.

CONSIDERATIONS

The topography of a site will affect the design and layout of a subsurface drainage system, which replaces a tile intake. Soil type delineation in the area of the intake will also affect the layout of the system.

In some large potholes or depressional areas, one tile intake does not completely drain all the

surface water in a timely manner for drainage purposes. In these situations, it will be important to use sound engineering judgment to determine the extent of a subsurface drainage system to replace the tile intake so the overall hydrologic characteristics of the site are not significantly changed.

When surface intakes are removed, there may be a need for an air vent or relief well. Engineering judgement must be used to make this decision.

Replacing surface intakes with subsurface tile in a pothole or depressional area may not provide equivalent drainage. However, it is the intent of the criteria in this standard to provide a system that will minimize the difference between the two types of systems.

PLANS AND SPECIFICATIONS

Plans and specifications for tile intake replacement shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

OPERATION AND MAINTENANCE

1. Inspect the area in the spring and after large rains to look for blowouts, signs of piping, etc. Fill and re-compact any holes that are found.
2. If settlement has occurred in the tile trenches, fill the trenches back to the ground surface or slightly higher so water can not pond in the trench.